

Appl. No. 10/780,946
Amdt. dated 09/19/2008
Response to Office Action of 07/21/2008

Attorney Docket No.: N1085-00201
[N1280-175.2003-0489]

REMARKS/ARGUMENTS

Claims 1-23 are pending in this application with claims 9-16 having been previously withdrawn from consideration. Each of examined claims 1-8 and 17-23 has been rejected.

5 Applicants respectfully request re-examination, reconsideration and allowance of each of claims 1-8 and 17-23.

10 In paragraph 2 of the subject Office Action, claims 1-8, 17-19 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Richter (US Pub. 2002/0180318) in view of Nolscher (US Pub. 2003/0143470). The Office Action also discusses the grounds of rejection using these two references in the Response to Arguments section of the Office Action which addresses Applicants' previous remarks as filed in the Response dated April 15, 2008.

15 Claims 1 and 17 represent the independent claims among the rejected claims. Each of claims 1 and 17 recites the feature of *exposing* a first set of patterns through openings in a first photomask and then *exposing* a subset of the first pattern, again, through openings in a second photomask. "Openings" in a photomask is known to one of ordinary skill in the art to indicate a clear portion of a photomask through which light is transmitted. In the second exposure operation, only a subset of the areas previously exposed in the first exposure operation, are exposed a second time. Two different
20 photomasks are used and different light sources are used for the different exposure operations which liberate different photoresist dissolving agents, both of which are included in a single coat of photoresist. It is of critical importance, however, to point out that some areas are exposed a second time using a second photomask in which openings correspond to some of the openings in the first photomask.

25 In particular, independent claim 1 recites:

exposing a first set of areas of the photoresist to a first light source through a first mask; and

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exposing only a second set of areas of the photoresist to a second light source through a second mask; and

wherein the second set of areas is a sub set of the first set of areas such that the first and second photoresist dissolving agents in the second set of areas neutralize each other to protect the second set of areas from being used as the patterns for forming the openings.

Independent claim 17 recites the distinguishing features of:

using a packing mask for exposing a first set of areas of the photoresist to a first light source to activate a photoresist dissolving agent generator of a first type to release a first photoresist dissolving agent in the first set of areas; and

using an unpacking mask for activating a photoresist dissolving agent generator of a second type to release a second photoresist dissolving agent to neutralize the first photoresist dissolving agent only in one or more predetermined areas within the first set of the areas, thereby protecting the one or more predetermined areas from being used as the patterns for forming the openings.

As conceded in the Office Action, the Richter reference does not teach exposing only a portion of the initially exposed features a second time.

Also as conceded in the Office Action, Nolscher does not teach exposing only a portion of the initially exposed features a second time.

Importantly, if one combined the teachings of Richter and Nolscher, the claimed invention **WOULD NOT RESULT**.

In the sentence bridging pages 3-4, the Office Action states that "Nolscher discloses . . . performing a second exposure by exposing a part of the first photoresist pattern". Applicants point out and the Examiner acknowledges that the "first photoresist pattern" represents features that were NOT exposed during the first exposure operation using a first photomask, since Nolscher teaches using positive photoresist.

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5 The Richter technology involves a second, blanket exposure after a first patterned exposure to thereby re-expose all of the portions that were previously exposed a first time. Richter does not teach using a mask for the second exposure. If one applied the technology of Nolscher, i.e. the successive mask exposure operations, to Richter, the claimed invention would not result since the second Nolscher mask exposes areas different than the areas exposed using the first mask. Moreover, one would not combine Nolscher with Richter because the direct application of Nolscher to the Richter technology would preclude doubly exposing any portions, which is an absolute requirement in Richter.

10 The Office Action apparently acknowledges as much in the Response to Arguments section. The Patent Office has apparently taken the position that the claimed invention is obvious based on taking the teachings of a first reference (Richter) and then picking and choosing aspects of a second reference (Nolscher) and using them in a way that is absolutely precluded according to the teachings of that second
15 (Nolscher) reference. A person of ordinary skill in the art would not use the features in this manner, as suggested by the Patent Office, because doing so would preclude the reference from functioning. (There is no teaching in Nolscher that suggests altering his mask set to provide successive masks with commonly exposed (clean) areas.) Applicants respectfully submit that such a position does not support an obviousness
20 rejection under the tenants 35 U.S.C. § 103.

"To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the
25 teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Richter teaches exposing some portions of a photoresist layer twice. Nolscher teaches using two different masks to expose different features in different exposure operations. Applicants respectfully submit that the claimed invention is non-obvious under the conditions of 35 U.S.C. § 103 because there is no line of reasoning

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as to why an artisan would have found the invention claimed in claims 1 and 17 obvious in light of the noted teachings of the references.

The claimed invention is distinguished from the combined teachings of the references and is non-obvious in view of the references because a) the combination of the references does not teach the claimed invention and b) the Patent Office's position that obviousness can be established by taking the teachings of a first reference and using aspects of a second reference in a way not taught, not intended, and not even possible according to the second reference is unsupportable.

Each of independent claims 1 and 17 is therefore distinguished from Richter in view of Nolscher and the same is true for claims 2-8 and 18-23 by virtue of their respective dependencies from claims 1 and 17. Therefore, the rejection of claims 1-8, 17-19 and 23 under 35 U.S.C. § 103(a) as being deemed unpatentable over Richter in view of Nolscher, should be withdrawn.

In paragraph 3 of the subject Office Action, claims 20-22 were rejected under 35 U.S.C. § 103(a) as being obvious over Richter in view of Nolscher and further in view of DeSimone (US Patent 6,929,904). Applicants respectfully submit that these claim rejections are overcome for reasons set forth below.

Claims 20-22 depend from independent claim 17 which is distinguished from the combination of Richter and Nolscher for reasons set forth above.

The DeSimone reference has apparently been relied upon for providing a polymer coating that is insoluble in water having a pH less than or equal to a specified pH but DeSimone does not make up for the above-stated deficiencies of the combination of Richter and Nolscher because DeSimone does not provide sequential exposure operations, much less sequential exposure operations using different photomasks.

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Therefore, independent claim 17 and thus dependent claims 20-22 are distinguished from Richter, Nolscher and DeSimone, taken alone or in combination. The rejection of claims 20-22 under 35 U.S.C. § 103(a), should be withdrawn.

CONCLUSION

5 Based on the foregoing, each of pending claims 1-8 and 17-23 is in allowable form and the application in condition for allowance, which action is respectfully and expeditiously requested.

The Assistant Commissioner for Patents is hereby authorized to charge any fees necessary to give effect to this filing and to credit any excess payment that may be
10 associated with this communication, to Deposit Account 04-1679.

Respectfully submitted,

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